

A process for direct synthesis of diesel distillates with high quality from  
5 synthesis gas through Fischer-Tropsch synthesis

### Abstract

10 Diesel fuels or blending stocks having excellent lubricity, oxidative  
stability and high cetane number are directly produced from synthesis gas over  
activated carbon supported cobalt based Fischer-Tropsch catalyst under the  
condition of temperature within the range of 120 to 400°C, reaction pressure  
within the range of 0.5 to 10.0 MPa, volume hourly space velocity of a mixture  
of hydrogen and carbon monoxide within the range of 100 to 5000, the mole  
15 ratio of hydrogen to carbon monoxide within the range of 1 to 4. Diesel fuels  
containing at least 95 wt % paraffins with an iso to normal ratio of about 0.03  
to 0.3, <50 ppm (wt) of sulfur and nitrogen, less than about 2 wt % unsaturates,  
and about 0.001 to less than 0.3 wt % oxygen were obtained by separating the  
Fischer-Tropsch product into a lighter (180 to 245 °C fraction) and heavier  
20 fractions (245 to 380°C fraction) utilizing a rough flash, and combining the  
180 to 245°C portion of the lighter product with the 245 to 380°C fraction in  
desired ratios.